REMARKS

Applicants' would like to thank the Examiner for the careful consideration given to this case. Applicants have submitted an Information Disclosure with the filing of this paper in conjunction with the Request for Continued Examination.

Claims 1-15, 20, 30-36, and 39 stand canceled. Claims 21-24 and 26-29 are withdrawn. Claims 16, 17, 19, 21(withdrawn), 23-25(withdrawn), 37, 38 and 40 have been amended.

Support for amended claims 16, 19, and 38 from Applicants' specification is shown below.

Claim 16 (currently amended): An exchange device comprising:

> one or more perfluorinated co-extruded thermoplastic hollow conduits, said perfluorinated co-extruded thermoplastic hollow conduits have an inner perfluorinated thermoplastic layer fused to an outer perfluorinated thermoplastic layer, the outer perfluorinated thermoplastic layer of said perfluorinated co-extruded thermoplastic hollow conduits has a lower melting point temperature than the inner perfluorinated thermoplastic layer of said perfluorinated thermoplastic hollow conduits;
>
> [[said]] the outer perfluorinated thermoplastic layer of said one or more perfluorinated co-extruded thermoplastic hollow conduits is fused at a first end portion of the co-extruded thermoplastic hollow conduits to a first perfluorinated thermoplastic resin wherein the inner perfluorinated thermoplastic layer remains open((pg. 49, line 6-7), and said first perfluorinated thermoplastic resin fused to an interior surface of a first end of a perfluorinated thermoplastic housing in a terminal end block structure, said perfluorinated thermoplastic housing has one or more structures on said interior surface of said first end of the perfluorinated thermoplastic housing, (pg. 8, [0013]) said first end portion of said perfluorinated co-extruded thermoplastic hollow conduits potted in the first perfluorinated thermoplastic resin; and

[[said]] the outer perfluorinated thermoplastic layer of said one or more perfluorinated co-extruded thermoplastic hollow conduits is fused at a second end portion of the ~~one or more~~ co-extruded thermoplastic hollow conduits [[with]] to a second perfluorinated thermoplastic resin wherein the inner perfluorinated thermoplastic layer remains open((pg. 49, line 6-7), and said second perfluorinated thermoplastic resin fused to an interior surface of a second end of a perfluorinated ~~an interior surface of a second end of the~~ thermoplastic housing in a terminal end block structure, said perfluorinated thermoplastic housing has one or more structures on said interior surface of said second end of the perfluorinated thermoplastic housing, (pg. 8, [0013]) said second end portion of said perfluorinated co-extruded thermoplastic hollow conduits potted in the second perfluorinated thermoplastic resin.

Claim 19 (currently amended): The exchange device of claim 16 where ~~the outer layer of the perfluorinated co-extruded thermoplastic hollow conduits includes a thermally conductive material.~~ the interior surface of a first end of said pefluorinated thermoplastic housing includes a perfluorinated thermoplastic adhesion layer and the interior surface of a second end of said perfluorinated thermoplastic housing includes a perfluorinated thermoplastic adhesion layer (pg. 42, {0066}, lines 9-11, pg. 43, lines 2-3 and lines 14-23)

Claim 38 (currently amended): The exchange device of claim 37 where the one or more structures include ~~that includes~~ grooves on said interior surfaces of said housing, and the grooves bond with the perfluorinated thermoplastic resin (pg. 31, lines 4-5).

The Examiner has asked the Applicants to show that claim 16 is patentable over Doh and Cesaroni. Applicants' claim 16 recites a perfluorinated exchange device with co-extruded hollow conduits where ***the outer perfluorinated thermoplastic layer, which has a lower melting point than the inner layer, of the one or more perfluorinated co-extruded thermoplastic hollow conduits is fused at an end portion of the co-extruded thermoplastic hollow conduits to a***

perfluorinated thermoplastic resin. The combination of Doh and Cesaroni do not teach or suggest this feature.

Doh does not disclose perfluorinated co-extruded thermoplastic hollow conduits and does not disclose hollow conduits where the outer perfluorinated thermoplastic layer of the one or more perfluorinated co-extruded thermoplastic hollow conduits has a lower melting point than the inner layer. Doh does not disclose that the outer layer of the hollow conduits is fused at a first/second end portion of the co-extruded thermoplastic hollow conduits to a first/second perfluorinated thermoplastic resin. Doh teaches melt bonding powdered potting material to the housing.

Cesaroni discloses ***complete melting*** of the ends ***of the tubes*** 9 with the heater block surface 4 as shown in FIG. 3 (see below). This results in complete mixing of the inner layer and outer adhesive layer of Cesaroni's tubes in the melt pool 12, and further the melt pool forms ***on*** the surface 11 of the channel block 8. The melt pool is a ***mixture*** of polymers from Cesaroni's tubes.

Cesaroni ***does not*** teach or include the feature that melt block 8 or melt surface 11 are ***fused*** to the layer of polymer 13. Cesaroni does not teach that heating block 3 is at a temperature to melt block 8 or melt surface 11 thereby fusing polymer 12 and surface 11. Rather, Cesaroni only discloses "Heating block 3 is heated to a temperature sufficient to *effect melting of the polymer used in the formation of the tubes 9*." Applicants' tubes are not completely melted- the outer layer of the co-extruded hollow conduits fuses with the resin and the inner layer remains open. Cesaroni does not teach a unified terminal end block structure of Applicants' invention where the outer perfluorinated thermoplastic layer of the co-extruded thermoplastic hollow conduits are fused to a perfluorinated thermoplastic resin and fused to an interior surface of a

perfluorinated thermoplastic housing with one or more structures on said interior surface of the perfluorinated housing.

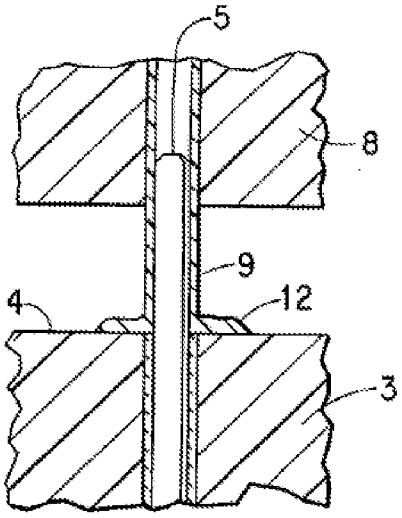

FIG.3

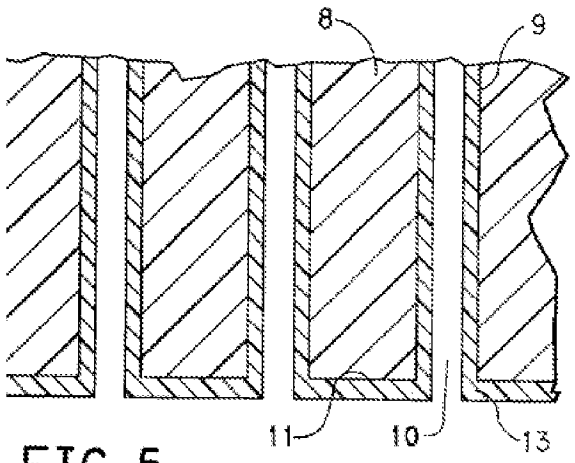

FIG.5

Cesaroni's use of cooled pins further teaches away (col. 4, lines 39-44) from bonding or fusing tubes 9 with the ***inner walls of Channel block 8*** which is additional support that Cesaroni does not teach a unified terminal end block structure of Applicants' invention where the perfluorinated co-extruded thermoplastic hollow conduits are fused or ***potted in*** the perfluorinated thermoplastic resin (see Cesaroni, col. 4, lines 39-44, ***emphasis added***):

> "Pins 5 are at a temperature of ***less than the melting point of the polymer*** of tubes 9 and preferably less than the softening point of such polymer, such that pins 5 will readily slide into and along tube 9. Thus, tubes 9 ***retain their integrity*** within channeled block 8, to permit fluid flow therethrough."

Accordingly, the teachings of Cesaroni could not be used to fuse the perfluorinated thermoplastic co-extruded hollow conduits or perflorinated thermoplastic resin with one or more structures on the interior surface of a perfluorinated housing. Applicants' claimed invention includes a structure where the outer perfluorinated thermoplastic layer of the perfluorinated co-extruded thermoplastic hollow conduits is fused to the pefluorinated thermoplastic resin.

Japanese Patent Application Disclosure No. 5-49875 discloses a ***thermoset*** epoxy resin as a casting resin and not a perfluorinated thermoplastic resin of Applicants' claimed invention. The thermoset epoxy resin ***cannot*** be melt processed and accordingly would not fuse to the perfluorinated thermoplastic hollow tubes or housing of Applicants' claimed invention.

Doh does not teach exchange devices that are integral at 140° C pressure 50 psi hot oil after 24 hours.

Regarding claims 18 and 37, the Applicant's specification contains test evidence that shows that heat exchanges of the "original" design (e.g. PFA housing with sintered MFA coating, PFA hollow conduits, MFA resin) lost their integrity at a temperature of 120 °C and pressure of 70 psig after 5 hours (Table 2). Devices with co-extruded hollow conduits as illustrated in Example 5 (e.g. MFA housing with sintered MFA coating, co-extruded hollow conduits, MFA resin) were integral at a temperature of 140 °C and pressure of 50 psig in hot oil after 24 hours. Accordingly, Applicants' specification contains test evidence that shows that the fluid integrity properties of Applicants' claimed exchange device where not inherent.

Applicants' maintain that claim 16 is patentable and therefore the use of the exchange device as in claim 25 is also patentable.

In view of the remarks presented above, it is respectfully submitted that all of the pending claims are in condition for final allowance and notice to such effect is respectfully requested.

Although Applicant believes no fees are due, the Commissioner is hereby authorized to charge deposit account No. **501-908** for any fees that may be due in connection with this response. Should the Examiner have any questions regarding these remarks, the Examiner is invited to initiate a telephone conference with the undersigned.

Respectfully Submitted,

/John E. Pillion Reg. #52122/

John E. Pillion
Agent for the Applicant
Registration No. 52,122

Dated: September 8, 2011